SHEAR STRENGTH PARAMETERS OF IMPROVED ORGANIC SOIL BY CALCIUM BASE STABILIZER

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A report submitted in partial fulfillment of the
requirements for the award of the degree of
Master of Engineering (Civil – Geotechnics)

Faculty of Civil Engineering
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JUNE 2015

To my beloved husband, family, lecturers and friends

ACKNOWLEDGEMENT

First of all, I am so grateful towards ALLAH S.W.T that bestowed me the strength and opportunity to finish my report.

In particular, I wish to express my greatest appreciation to my supervisor, Dr. Ahmad Safuan A.Rashid for his encouragement, guidance, critics and motivations. Without his continued support and interest, this report would have been the same as presented here.

At the same moment, I am grateful to all my family members for their support and encouragement. My sincere appreciations also to my beloved husband, and not forgetting to all technicians, especially Mr. Zul and Wak for their technical advices and supports and to my co-supervisor Dr. Nima Latifi for his support and guidance in completing this study. Their kindness, experiences and knowledge are really helps me to solve some problems in my study during the laboratory works.

I also indebted to Faculty of Civil Engineering, University Technology Malaysia for giving me an opportunity to gain the experience, widen my knowledge, and the facilities provided to me had simplified my work throughout the study period.

I hope my findings in the study will expand the knowledge in this field and contribute to all of us in future.

ABSTRACT

The stabilization of soils with additives is a chemically modified method that can be used to improve soils with weak engineering properties. The stabilizing mechanisms of non-traditional additives are not fully understood, and their proprietary chemical composition makes it very difficult to evaluate the stabilizing mechanisms and predict their performance. The present research aimed to determine the strength of peat soil stabilized with calcium base stabilizer in different percentage. To determine the physical reaction of SH-85 for the soil stabilization and to determine to microstructural characteristics behavior of organic soils treated with SH-85. Several test will be carried out such as Atterberg Limit, Specific Gravity, Standard Proctor Test and Unconfined Compressive Strength Test (UCS) were performed after time frame 3, 7 and 28 days as curing time with different percentage of SH-85 (3 o 15%), respectively. These tests used to assess the engineering and shear properties of the stabilized organic soil. Apart from the physicochemical characteristics of the stabilized organic, scanning electron microscopy (FESEM) test were also carried out to study the ongoing microstructural changes. Based on the results from UCS test it was found that the specified additives can increase the peat soils strength, as the increment of SH-85 is around 10 times more than untreated soil respectively, which is gained first 7 days of curing. Scanning electron microscopy results shows that the porosity of untreated soil filled by the new cementitious products.

ABSTRAK

Penstabilan tanah dengan bahan tambahan adalah kaedah kimia diubahsuai yang boleh digunakan untuk meningkatkan tanah dengan ciri-ciri kejuruteraan yang lemah. Mekanisme menstabilkan bahan tambahan bukan tradisional tidak difahami sepenuhnya, dan komposisi kimia proprietari mereka menjadikan ia amat sukar untuk menilai mekanisme stabil dan meramalkan prestasi mereka. Kajian ini bertujuan untuk menentukan kekuatan tanah gambut stabil dengan penstabil asas kalsium dalam peratusan yang berbeza. Untuk menentukan reaksi fizikal SH-85 untuk penstabilan tanah dan untuk menentukan ciri-ciri tingkah laku mikrostruktur tanah organik dirawat dengan SH-85. Beberapa ujian akan dijalankan seperti Had Atterberg, graviti spesifik, Standard Proctor dan Ujian Kekuatan Mampatan Tak Terkurung Test (UCS) telah dijalankan selepas tempoh 3, 7 dan 28 hari sebagai mengubati masa dengan peratusan yang berbeza SH-85 (3 to 15 %) masing-masing. Ujian ini digunakan untuk menilai kejuruteraan dan ricih sifat-sifat tanah organik yang stabil. Selain daripada ciri-ciri fizikokimia organik, imbasan mikroskop elektron yang stabil (FESEM) Ujian juga dijalankan untuk mengkaji perubahan mikrostruktur berterusan. Berdasarkan keputusan daripada ujian UCS didapati bahawa bahan tambahan dinyatakan boleh meningkatkan kekuatan tanah gambut, sebagai penambahan SH-85 adalah kira-kira 10 kali lebih banyak daripada tanah yang tidak dirawat masing-masing, yang diperolehi pertama 7 hari pengawetan. Mengimbas keputusan mikroskop elektron menunjukkan bahawa keliangan tanah yang telah dirawat dipenuhi oleh produk bersimen baru.